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From staff-mix to skill-mix and beyond

By Carl-Ardy Dubois and Debbie Singh

Healthcare organizations have a range of options for ensuring a richer staff-mix: increasing the number of personnel, having higher ratios of qualified workers, having higher ratios of senior staff members, or installing multidisciplinary teams.

Despite conflicting findings and the need for further research, a number of studies and systematic reviews suggest that a richer staff-mix may be associated with better outcomes and fewer adverse events for patients. The evidence, however, is highly limited by practical limitations and methodological shortcomings.

While many studies have reported positive impacts from enriching staff-mix, they do not offer clear guidance about ideal thresholds in terms of personnel/patient ratios or the proportion of different categories of staff members on teams. More fundamentally, the staff-mix perspective that emphasizes numbers and types of personnel gives less attention to the conditions that determine how staff members' skills are used.

Despite the rhetorical use of 'skill mix' to describe the different options for deploying healthcare personnel, the focus is, in reality, not on skill but on grades, educational qualifications, job titles and duration of experience that are, at best, proxies for skill levels. An effective system of HR optimisation cannot, however, be restricted to the numbers and types of personnel available.

Such a system must also ensure that personnel work to their full potential. Doing so requires a more dynamic approach to skill management that goes beyond the mix of available staff members.

Skill management refers to an organization's ability to optimize the use of its workforce. The focus shifts here from achieving a specific mix of different types of personnel to adapting workers' attributes - such as knowledge, skills, and behaviors - and roles to changing environmental conditions and demands. Skill management enables organizations to optimize patient outcomes while ensuring the most effective, flexible and cost-effective use of human resources.
A diverse set of interventions have been tested to achieve this dynamic approach to HR optimisation. We divide them into two main dimensions: skill development and skill flexibility.

Skill development
One of the greatest challenges facing healthcare organizations in recent years has been how to adjust to the rapid pace of a wide variety of internal and external changes: environmental changes in consumers' tastes and demands; changes in legal requirements; socio-demographic and epidemiologic changes; technological developments and economic fluctuations.

To a large extent, organizations' strategic and practical adjustments depend on their members' capacity to transform. An organization updates its responses to changes only when its workforce can learn and utilise the skills required to take on new roles and functions. These additional roles and functions may be at higher, parallel, or even lower level, and they can come about through two distinct processes: role enhancement and role enlargement.

Role enhancement
Role enhancement involves expanding a group of workers' skills so they can assume a wider and higher range of responsibilities through innovative and non-traditional roles. Enhancing staff members' roles through new competencies gives to employees the opportunity to acquire new competencies and expand their tasks so that they can take on responsibilities traditionally carried out at higher levels.

By altering the content of their work, employees are offered opportunities for individual achievement and recognition. Under this model there is greater work depth because employees are involved in tasks that increase their control or responsibility. Role enrichment is considered a vertical and upward expansion of work because it alters authority, responsibility, level of complexity and assignment specificity.

In a specific healthcare context, role enhancement describes a level of practice that maximizes workers' use of in-depth knowledge and skills (related to clinical practice, education, research, professional development, and leadership) to meet clients' health needs.

Role enhancement does not entail adding functions from other professions. It occurs within a given profession's full scope of practice through the integration of theoretical, research-based and practical knowledge inherent to the development of a discipline. It can also arise from innovative professional activity, new models of healthcare delivery, and organizational changes that promote development of new knowledge, skills and practices.

Through experience, continued professional growth and development, and collaboration with colleagues from other disciplines, healthcare workers can develop new skills, abilities and techniques they did not obtain during previous clinical preparation. In addition, as healthcare work expands into new settings, the situational factors that shape service provision in those environments create demands for new skills.

In healthcare, role enhancement has been associated with the potential to increase longitudinal and personal continuity and improve patients' health outcomes by enabling one professional to cover a wider range of care needs or by enabling one patient to be cared for by fewer workers. As a result, many healthcare professionals such as nurses, pharmacists and GPs have recently expanded their responsibilities beyond their traditional scope of practice to include more innovative roles. In many cases, these role expansions were initiated in order to ensure that individual professionals would be able to oversee a greater proportion of their patients' care.

Primary care and prevention are the main areas in which nurses have taken the lead in delivering expanded services, including health promotion, health screening, and discharge follow-up. Since the 1990s, nurses in UK general practices have been responsible for carrying out well-patient health checks and providing lifestyle counselling and other interventions in accordance with treatment guidelines.

Nurses have also expanded their roles by specialising in practice domains and by helping people with particular conditions. Such specialist nurses can be based in either primary or secondary care, and they are particularly active in nurse-led clinics, where nurses assume responsibilities such as managing people with long-term conditions, providing health promotion advice, monitoring and informing patients, and screening for diseases (e.g., cervical screening, cardiovascular screening).

Role expansion can also be seen in nurse-led outpatient follow-ups, whereby hospital or community-based nurses oversee discharge planning and post-discharge outpatient follow-up. These examples illustrate the expansion of nursing into areas that were often unmet or inadequately addressed.

While retaining their generalist background, some GPs have also expanded their roles. In the US and the UK, GPs who hold additional qualifications or training and who focus on particular areas are sometimes known as 'GPs with special interests'. Such physicians can offer specialist care in the community or work as part of multidisciplinary hospital and primary care teams.

Similar developments have occurred for pharmacists, whose work has expanded far beyond the distribution of medications to include patient education, health promotion, counselling, medication management, health monitoring, and even, in some jurisdictions, prescribing. In England, the Medicines Management Collaborative involves 146 primary care trusts and 44 trusts, and it aims to engage all members of the pharmacy team in identifying and addressing patients' unmet pharmaceutical needs.

Despite major interest in developing enhanced roles, evidence about the impact of these new roles is limited and has focussed mostly on nursing. Overall, the evidence suggests that health professionals can learn specific advanced skills that fall outside the scope of their routine practice and apply them in clinical settings. However the impact of such role enhancement remains uncertain.

Some studies have found improvements associated with organizational innovations that draw on nurses with advanced skills, including nurse-led clinics or specialist nurse-led initiatives. Other studies have found fewer or

no benefits. However there are variations in the nursing interventions in these studies which may lead to inconsistencies in the findings and make it difficult to draw conclusions about the effects of enhanced nursing roles on patient outcomes.

We cannot be certain whether any observed differences are due to the nurses' roles or to other intervention-related factors (e.g., resource intensity, increased follow-up, access to a multidisciplinary team). Thus, although many studies have revealed connections between nurses' role enhancements and safe and effective care or improved patient outcomes, it remains uncertain whether the benefits are due to specific interventions or nurses' roles. Furthermore, the evidence regarding the opportunity costs of such service developments and marginal gains in terms of health outcomes is still scarce and often conflicting.

In addition to patient outcomes, role enhancement also likely affects professionals. Role enhancement echoes research about motivational theory and job enrichment. Motivation may be a function of work factors such as responsibility, advancement, recognition and opportunity to acquire and use vertical skills including, for example, leadership and self-regulation.

It has been suggested that enriched jobs that include these factors lead to satisfaction and motivation because they provide workers with more control, responsibility and discretion over how they perform their jobs. Research on role enhancement in various sectors suggests that enriched jobs are more meaningful and less exhausting and associated with greater job satisfaction.

In the healthcare arena, role enhancement may also have a positive effect on workforce recruitment and retention, either by providing more advanced roles with increases in pay and status or through the creation of new clinical career pathways.
Despite the benefits associated with role enhancement, some caution is required. First, as traditional roles and functions change, confusion and disagreements can challenge professionals' identities and engender conflicts among practitioners and occupational groups. Such conflicts can, in turn, lead to low morale and antagonistic working relationships.

Second, work expansion, even in a vertical direction, is not always synonymous with job enrichment or role enhancement. In the absence of an explicit professionalization project, HR management strategies designed to expand practice scopes may undermine professionals' distinctive work domains because they blur role boundaries and make the work of one profession indistinguishable from that of others.

Lack of clarity about professional practice means that, in fulfilling useful, flexible and cost-effective new roles, individuals may serve managerial, economic and patient interests, but their roles may remain limited and lack any obvious benefits for the development of their professions.

Some analysts have even suggested that the skill-mix changes that have recently gained popularity (e.g., addition of new functions to nurses' roles) are nothing more than revamped versions of rationalization programs, undertakings that exposed workers to a potent mix of resource constraints, heavy workloads, significant role changes and pressures to develop a broader range of skills. These increased pressures to develop new skills and reach higher educational standards may be counter-productive if they demotivate workers who feel they must take on additional work without reciprocal support.

Third, it cannot be assumed that role enhancement means a general upskilling of workers. Just because staff members must perform more tasks at higher levels does not mean they have been supported by further training. Several influential reports have voiced concerns that the broad range of initiatives being implemented to expand healthcare workers' roles is not always combined with efforts to establish educational and training programs that are consistent with these developments.

While some key stakeholders, including governments and employers, have argued for the expansion of scopes of practice in healthcare, the pace of service development has often outstripped the ability of training programs to equip workers.

Role enlargement
Role enlargement is the horizontal accrual and diversification of employees' skills. Staff members are able to extend their activities and take on roles and functions at parallel levels (horizontal enlargement) or lower levels (downward enlargement).

In industry, role enlargement aims to change the scope of jobs in an attempt to motivate workers. This practice emerged as a response to excessive specialization in the division of industrial labour, whereby work is typically divided into small units, each of which is performed repetitively by an individual worker. Concerns about extreme specialization and its adverse effects on workers' morale led to calls to restore some of the skill, responsibility and variety that have been lost through work simplification.

In healthcare, role enlargement has been part of efforts to shift service delivery from a task-oriented approach towards integrated care carried out by workers who are able to meet patients' multiple and complex needs. While the rapidly shifting balance between acute and chronic health problems in industrialised countries is placing new demands on healthcare workers, there is a general consensus that healthcare professionals' skills must be expanded in order to provide effective care for people with chronic conditions.

Population-based approaches to care that have been part of recent reforms in many jurisdictions move healthcare workers from caring for a single unit (one person seeking care) towards planning and delivering care to defined populations, to ensure that effective interventions reach all the people who need them within a given population. To meet this challenge, practitioners must assume new roles such as the ability to manage populations, to assess the healthcare needs of wider groups, and to plan and implement appropriate levels of health and social-care interventions.

As with role enhancement, role enlargement succeeds not by replacing one professional with another but by adding new dimensions to healthcare through the expansion of workers' skill repertoires. Such role enlargement has been present in many recent initiatives in which the main focus has been on practitioners' acquisition of additional, basic patient-care skills.
These new skills enable practitioners to perform certain routine, frequently provided, easily trainable, and low-risk procedures (e.g., monitoring vital signs, measuring blood glucose level, carrying out venipuncture for blood sampling, measuring peak expiratory flow rate, examining for breast lumps and providing advice on health promotion) that can help bring about more integrated care.

Horizontal expansion can also be seen in increased interest in cross-training generic and nonclinical skills, such as patient/client education, technical writing and team dynamics/communication. The World Health Organization (2005) has identified five core generic skills that transcend the boundaries of specific disciplines and apply to everyone who cares for patients with chronic conditions: patient-centred care, partnering, quality improvement, information and communication technology, and a public health perspective.

In addition to completing basic disciplinary training, professionals who care for patients with chronic conditions must acquire a broad range of skills related to programmatic activities, quality improvement, case management, systems design and management of clinical services. In several countries, this role enlargement is reflected in training efforts whereby healthcare workers learn to negotiate care plans with patients, to support patients' self-management, to use information systems, and to work as members of teams.

Beyond its potential to reduce service fragmentation, role enlargement can also have a positive impact on staff members themselves. Studies on the effects of job-enlargement programs have generally shown that focusing on role breadth tends to increase job variety, enhance task significance, increase autonomy, and improve motivation. In one study, multi-skilled healthcare workers with broad practice scopes reported having more interesting jobs, greater job security, and more feelings of enhanced contribution to their hospital than did uni-skilled employees.

However, some research has also found that role enlargement must be undertaken cautiously because unabated expansion can eventually threaten professional identity, intensify workloads to the point of excess, and spark significant levels of demotivation and dissatisfaction. Nurses, for instance, have reported negative outcomes associated with role enlargement, primarily as a result of having to undertake more tasks.

Occurring at a time of nursing shortage and often in the absence of reciprocal workload support from other occupations, these extra demands involve juggling additional functions on top of pre-existing clinical responsibilities and in more pressured environments. In such cases, staff members' resentment is fuelled by the perception that their specialist knowledge and skills are being devalued at the same time as they are being asked to take on a broader range of generic functions while less qualified personnel are taking over their traditional areas of responsibility.

Skill flexibility

Another closely related dimension of skill management is skill flexibility. This term refers to using multi-skilled workers that can switch from one role to another while employing various skills as required. A multi-skilled workforce capable of doing different jobs and delivering a wide range of services to clients results from increasing the breadth and depth of work. In healthcare, role substitution and role delegation are two of the main strategies being widely tested.

Role substitution
Role substitution involves extending practice scopes by encouraging the workforce to work across and beyond traditional professional divides in order to achieve more efficient workforce deployment. In contrast to role development, which occurs within dynamic disciplinary boundaries, role substitution entails competencies required to perform activities that are usually considered to be outside traditional practice scopes.

In recent decades role substitution has blurred traditional professional boundaries. In the US for example, physician assistants with a wide variety of backgrounds, including nursing and social care, have become an attractive option for expanding workforce capacity in underserved areas.

Similarly, in many countries several types of non-professionally qualified staff members have been used as substitutes for nurses. Substitution of less expensive 'care assistants' for more expensive nurses has become increasingly apparent in recent years in response to cost-containment initiatives and nurse shortages.

Other role substitution examples include training respiratory therapists to perform electroencephalograms (EEGs) and medical technologists to perform certain radiological procedures. In the field of mental health, nurse practitioners have extended their activities to many areas previously reserved for physicians, including treating depression and anxiety disorders as well as clinically assessing people who are receiving anti-psychotic injections. Meanwhile, both family physicians and midwives have been sharing roles with obstetrician/gynaecologists (in prenatal and postnatal care, delivery and routine screening tests).

Over the last few decades, pressures such as rising costs, personnel shortages, and access limitations have raised interest in role substitution as a skill management tool for fostering more cost-effective use of a diversely skilled and flexible workforce. But it remains unclear whether role substitution lowers costs.

Substitution of nurses for physicians has received a great deal of research attention. Overall, the evidence supports the view that, in many clinical areas, particularly primary care, there is substantial potential for nurse substitution to lower costs without decreasing quality. Nurses may even extend quality into areas of care not generally provided by physicians.
In this respect, several studies have shown that nurses operating in roles that overlap physicians' achieve health outcomes that are as good as those accomplished by physicians and generate higher patient-satisfaction ratings - particularly with regard to interpersonal skills. Substituting nurse midwives for physicians has been also well studied and, again, the findings suggest that health outcomes for patients are comparable for both groups, but that midwives may use less technology and analgesia in intrapartum care.

Substituting less qualified personnel for highly qualified nurses is, however, a contentious practice. Although such role substitution offers a way to cope with staff shortages, many studies have suggested that it may adversely affect patient-related outcomes (e.g., decreased satisfaction, decreased care quality) and nurse-related outcomes (e.g., increased on-call work, increased sick leave and overtime work, increased workload for registered nurses).

While workforce substitution is often initiated as a cost-saving strategy, evidence about this is weak. Substitute workers may be able to provide equal quality care, yet the impact on costs depends on a number of factors, including whether substitutes answer previously unmet patient needs or, instead, generate new demands for care. It has been suggested that nurses, compared with physicians, spend more time with patients, recall them at higher rates, and carry out more investigations - all of which have cost implications.

In addition, although it is generally less expensive to train nurses than physicians, savings may be eroded because nurses tend to have lower lifetime workforce participation rates than doctors. Similarly, while there is no unanimity in this regard, current evidence suggests that substituting nurse aides or nurse assistants for more highly qualified and more expensive nurses may be no more cost-effective because of the various hidden expenses associated with skill dilution: higher absence and turnover rates of less-qualified staff, greater levels of unproductive time due to lack of autonomy and capacity to act independently, and higher rates of adverse events and risks for patients.

Another danger with role substitution is that skills that are shared by a broad range of professionals may become a low priority for individual practitioners. Increasing the range of people capable of undertaking particular tasks might mean that those tasks are no longer specifically 'owned' by anyone. Reports have shown that practices intended to increase continuity have led, in reality, to role and skills drift as well as to more fragmented care.

One example is the reduction of medical involvement in maternity care that has occurred in tandem with the extension of midwives' scopes of practice, leading to situations in which physicians no longer see certain tasks (e.g. suturing the perineum after a delivery) as belonging to them.

Role delegation
Role delegation involves transferring certain responsibilities or tasks from one grade to another by breaking down traditional job demarcations. In practice, groups of professionals take on roles delegated to them by other groups of professionals. Interest in delegation has been driven by its potential to make highly qualified and high-cost practitioners withdraw from activities that can be competently performed by less qualified and lower-cost practitioners. As a result, the former group can devote more time to the interventions that only they can perform.

Some research suggests that between 25 percent and 70 percent of physicians' (most often generalists') tasks could be delegated to other healthcare professionals. In the same vein, other studies have concluded that GP workload for specific patient groups can be reduced by up to 50 percent by delegating some activities to nurses, including managing requests for out-of-hours appointments, same-day appointments, and home visits.

A more recent estimate of the Wanless report in the UK is that nurse practitioners could take on about 20 percent of work currently undertaken by GPs and junior physicians, whilst healthcare assistants could cover about 12.5 percent of nurses' current workload.

According to other studies, task delegation would allow a significant proportion of nurses' workload to be taken up by healthcare assistants, auxiliary nurses, and other less-qualified staff members .

It has been found that in accident and emergency units over a 24-hour period, nursing staff members spent 49 percent of their time on nursing tasks, 21 percent on communicating with patients, 17 percent on clerical work, and 13 percent on housekeeping. These figures mean that a significant proportion of current nursing work could be delegated to untrained personnel such as healthcare assistants or support workers.

Evidence concerning the impact of role delegation on both patient and staff outcome is limited and conflicting. The benefits of role delegation need to be balanced by the potential drawbacks that researchers have found. Removing simple tasks from GPs and delegating them to other staff members may affect the sense of connection between patients and their physicians, thus compromising this important relationship.

Second, removing relatively simple tasks in order to allow physicians and nurses to manage more complex health problems may deprive physicians of valuable interludes in their work and be counterproductive if it leads to increased stress and job dissatisfaction. Furthermore, unless there is a reciprocal helping relationship or additional resources and support, shifting work from higher to lower-skilled groups can lead to excessive workloads for the latter and fuel the perception that one group is off-loading tasks onto another.

Finally, assessment of the scope for healthcare role delegation must take account of the context of workforce shortage. If 20 percent of GPs' and junior physicians' work were shifted to nurses, as suggested by the Wanless report mentioned above, pressure on GPs would decrease. That move could, however, exacerbate nurses' dissatisfaction with their workloads and simply transfer the problem of workforce shortage from one professional group to another.

Role enhancement, role enlargement, role substitution and role delegation are all personnel management tools that divert focus away from the issue of numbers and occupational mix towards the range of roles, functions, responsibilities and activities each staff member is educated and able to perform. These four tactics reflect a more dynamic approach to HR optimisation, one that emphasises responsiveness to patients' needs while enabling providers to practise to the full scope of their abilities.

Such an approach is based on the premise that providers' scopes of practice and use of skills may alter over time and across different contexts, whether in response to macro-level system changes (e.g., emphasis on

primary healthcare, shift from institutional to community care, new developments in technology) or evolution at the level of the employment setting (e.g., client needs, organizational resources).

From this perspective, managers are faced with a twofold challenge: creating the conditions so that the human resources at their disposal can develop the skills necessary to fill the new roles imposed by changing services; and finding appropriate mechanisms for ensuring greater flexibility in using the competencies their staff possess. From an instrumental point of view, this implies a stronger emphasis on developing tools that will enable managers to clarify the roles of their staff in different contexts, to monitor the scopes of practice of their staff, and to detect any barrier or facilitator to effective utilisation of the workforce.

The managerial and policy challenge is to monitor and narrow the gaps between the potential contribution of health worker (as allowed by the education, knowledge and skill base) and their actual practice as delimited by legislation, employer policies, experience, and context of practice.

From this perspective, interventions aimed at HR optimisation must target or take account of a range of factors likely to influence scopes of practice and the use of providers' skills: legislation and standards; educational programs; practice settings (including availability of adequate support systems such as orientation programs and professional development); clients' needs.

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For references associated with this article, please see: http://www.human-resources-health.com/content/7/1/87